EXHIBIT J

An Assessment and Comparison of the Uniformity and Reproducibility of B Readings among Multiple Readers: A Focused Study

I was asked to investigate the prevalence of radiographic evidence associated with parenchymal and pleural abnormalities of claimants in a legal matter. In accordance with National Institute of Occupational Safety & Health (NIOSH) recommended practices, a protocol was designed for multiple, blinded B-readers. I recruited three B-readers for the study. To reflect the overall population of US B-readers, two radiologists and one non-radiologist (pulmonologist) were recruited.

The purpose of this study was to assess the radiographic evidence consistent with asbestos-related disease and to assess the accuracy and reproducibility of ILO classifications reported previously by another B Reader (Dr. Breyer) when his findings were compared to those of three experienced NIOSH certified B Readers. This report summarizes the methodology used for this study, including B reader selection, randomization and de-identification of study films and inclusion of NIOSH control films. Results and conclusions associated with the summary assessments are also discussed. By comparing the summary assessments to Dr. Breyer's reported results, a discussion of the accuracy, reproducibility, and reliability in classifying chest radiographs as normal or abnormal is presented.

My name is Daniel A. Henry, M.D., F.A.C.R., and I am a Thoracic Radiologist and former Section Chief of Thoracic Imaging in the Department of Radiology at the Medical College of Virginia School of Medicine at Virginia Commonwealth University. I obtained my medical degree from the St. Louis University School of Medicine. I served an internship at the St. Louis University Group Hospitals, and a radiology residency at the Medical College of Virginia. Upon completion of my residency, I served two years in the U.S. Air Force, attaining the rank of Major, and returned to the Medical College of Virginia as a faculty member in 1977. My academic career has been solely confined to the teaching of and practice of imaging of the chest for the past 30+ years. In 1985, I was certified by the National Institute of Occupational Safety & Health ("NIOSH") as a B-reader and have been continuously recertified as a B-reader for the last 25 years. Since 1990, I have been a Member of the American College of Radiology ("ACR") Committee (Task Force) on Pneumoconioses, and I have been the Chairman of the ACR Pneumoconioses Committee since 2004. For many years, the ACR Pneumoconioses Committee in collaboration with NIOSH, has periodically taught an educational course for physicians who wish to be certified or recertified as a B-reader. As a member of the ACR Pneumoconioses Committee faculty for that course, I teach a segment of the B-reader course dedicated to asbestos-related disorders. I was program chair as well as a faculty member for the most recent American College of Radiology Symposium on Radiology of the Pneumoconioses in April 2009.

I am a cofounder and member of the Virginia Commonwealth University Occupational Pulmonary Committee. In this capacity I interpret chest X-rays for the Workers Compensation Committee of the Commonwealth of Virginia and recently participated in a redesign and update of that program. Since 1995, I have been an on-going participant in the NIOSH coal miners health surveillance programs and continue to act as consultant for their pneumoconioses chest radiography instruction programs. I also recently participated in the NIOSH reading trials for the conversion of analog to digital imaging for ILO classification of radiographs. I was an invited speaker at the recent (2008) NIOSH workshop on the Transition to Digital Imaging in Rockville, MD and also participated in the ILO Committee Discussion Group to revise the *ILO Guidelines for the Use of the ILO International Classification of Radiographs of Pneumoconioses* to include the classification of digital images. I am also a member of the Radiological Society of North America, American Roentgen Ray Society, Society of Thoracic Radiology, and a member and Fellow of the American College of Radiology.

Introduction

In 1949, the International Labour Office (ILO) promulgated guidelines for systematically describing lung abnormalities, seen in chest radiographs, associated with inhalation exposure to dusts (NIOSH, 2009a). By establishing a standard method for evaluation of chest radiographs, the ILO aimed to achieve uniformity in assessing pneumoconiosis across readers. In 2002, the ILO published a revision to the guidelines with the objective of "codify[ing] the radiographic abnormalities of the pneumoconioses in a simple, reproducible manner" (ILO, 2002).

The NIOSH B Reader program was established in 1974 and was designed to ensure competency and consistency, while limiting variation among radiographic readings (Mulloy et al., 1993). Physicians certified as NIOSH B Readers have demonstrated proficiency in classifying chest radiographs using the ILO standards for systematically describing and recording the appearance of abnormalities associated with the inhalation of dusts (Morgan, 1979; NIOSH, 2009a). Use of standardized ILO classifications helps to assure that chest radiographs are evaluated in a way that is fair, consistent, and reproducible geographically and over time.

The validity of ILO Classification has been repeatedly demonstrated in many settings and industries. For example, classifications of radiographs of coal miners have shown clear correlations with dust exposure, lung dust burden, lung pathology, and mortality (Attfield & Wagner, 1992; Ruckley 1984; Miller 1985). Although the classification system has been repeatedly validated, interpretation of chest radiographs using the ILO B-reader methodology has occasionally involved variability or possible bias; potential problems and the application of the ILO system have been discussed previously in the literature (Attfield & Wagner, 1992; Henry, 2002; Mulloy et al., 1993; Ohar et al., 2004; NIOSH, 2009b). It has been noted that the sources of this variability included inter-reader and intra-reader variability, as well as experience and

attitude of the reader (Henry, 2002). Also, although NIOSH-certified B Readers have demonstrated a degree of proficiency in classifying chest radiographs using systematic standards, it is possible that the awareness of supplementary details specific to individuals (i.e., medical or exposure information, or other readers' interpretations) can introduce bias into their classifications (ILO, 2002). To address these concerns, NIOSH has recently introduced a "B-Reader Code of Ethics" as well as recommended practices for "Contested Proceedings"(NIOSH 2009b, d).

My purpose, then, was to evaluate the accuracy and reliability of B Reader interpretations of chest radiographs using the current ILO Guidelines. To this end, a single-blind analysis was conducted where posteroanterior chest radiographs were assessed by three experienced NIOSH-certified B Readers.

Methods

Sixty-five posteroanterior (PA) chest radiographs or chest x-rays (CXR) were obtained during a medical screening and were previously classified by a NIOSH-certified B Reader (Dr. Breyer). In order to evaluate the validity and reliability of these reported findings, three highly-experienced NIOSH-certified B Readers were recruited to evaluate these 65 chest radiographs using the standard ILO radiographs and classification guidelines. Several criteria were met by the recruited experts:

a. Each physician was a current NIOSH certified B-reader;
b. Each was available to classify studies during the time of the study;
c. Each was an experienced B-reader with at least 20 years experience and each had successfully passed multiple B Reader re-certifications
d. Each was personally known to me as an individual of integrity; and
e. Each is considered a mainstream B Reader as defined by NIOSH (NIOSHe).

In addition to the above criteria, each physician reader was an academic clinician and teacher, was a faculty member in good standing at their respective academic medical centers and schools of medicine, and had authored peer-reviewed publications on the proper interpretation of radiographic studies used in the diagnosis of occupational lung disease.

The study group was comprised of 65 PA radiographs (n=65) provided by claimants' attorneys to defense attorneys. To promote a high degree of quality assurance in the classification process, and in accordance with NIOSH recommended practices, previously reviewed and categorized but unknown or control radiographs were added to the study group. Twenty-two control radiographs drawn from the NIOSH Home Study Syllabus material were included in the collection of films and all radiographs had been previously classified by expert B Readers. The control films included both normal and abnormal studies with a variety of classification findings. All

radiographs, including the control films, were masked in an identical fashion to prevent readers from discovering the identification or origin of any of the films.

The three expert NIOSH certified B Readers were blinded to the source of the radiographs, the purpose of the study, other B Readers involved in the study, previous classifications of all radiographs, additional reported findings, clinical histories of the subjects, and names and demographic information of the subjects. The expert B Readers were instructed to not discuss the cases with one another and were never in contact with one another during the study period. Each reader was compensated.

Identifying markings and information were masked from all radiographs (n=87) in an identical manner. Each radiograph was assigned a random six-digit identification code consisting of random numbers and letters. After masking, the radiographs were randomly ordered and shipped separately to each B Reader. Shipments included standard instructions to review the radiographs in a manner consistent with their training, certification and normal practices, 87 NIOSH Roentgenographic Interpretation (RI) forms, and a chain of custody document. Since the radiographs were de-identified and randomly ordered, study readers were unable to differentiate subject radiographs from NIOSH control radiographs. Upon return of the 87 radiographs and associated RI forms, the radiographs were repackaged in a random order and shipped to the next study reader. Upon completion of all readings, radiographs were unmasked and returned to the original source.

For the purposes of this study, pleural abnormalities were recorded as present or absent and the ILO classification for profusion rating was noted. As depicted in Figure 1, profusion is classified into one of four ordered major categories regarding the presence of small opacities (ILO, 2000). Category 0 refers to the absence of small opacities or the presence of small opacities that are less profuse that category 1. The level of profusion characteristic is chosen by comparing the subject radiographs with standard ILO radiographs that define the levels of profusion characteristics of centrally placed minor categories (0/0, 1/1, 2/2, 3/3) within these major categories (ILO, 2000). For contested proceedings, a small opacity profusion rating of 0 is normal and a profusion classification of 1/0 or greater is considered abnormal and frequently considered to be consistent with pneumoconiosis in compensation proceedings (NIOSH, 2010).

Increased profusion of small opacities												
Major Categories	0			1			2			3		
Minor categories	0/-	0/0	0/1	1/0	1/1	1/2	2/1	2/2	2/3	3/2	3/3	3/+

Figure 1: Major Categories and minor categories associated with profusion ratings (ILO Guidelines, 2000).

Prior to initiation of the study, a written protocol was reviewed by the Copernicus Group Independent Review Board (IRB). This IRB granted approval for this study protocol on March 16, 2010. I created the design of this study with respect to recruiting the study readers, the inclusion of control radiographs, and the blinding and randomization of the radiographs. Scientists from ChemRisk®, LLC carried out the data collection, review, and summary for the study in accordance with my study instructions. I did not participate in the study other than to review the control films, verify their classifications, and review the masking techniques employed for all radiographs.

For comparison purposes, a summary reading was calculated using the recommended NIOSH approach, which involves recording the median score of the independent study readers' findings. This approach removes potential outliers and allows direct comparison of the study readers' findings and Dr. Breyer's results. Data from the NIOSH RI forms were entered into a password-protected data file and tabulated with the results reported by Dr. Breyer.

Results

Results were obtained from the three expert B Readers and are summarized in Table 1. Study identification number, the date the radiograph was originally obtained, and the interpretation results reported by each reader are included. Each expert B Reader interpreted a total of 87 masked radiographs (65 subject and 22 NIOSH control radiographs) and none of the readers reported any problems or concerns with film quality. For comparison purposes, a summary rating associated with the profusion score (-/-) and the presence of pleural abnormalities were determined by using the median reading from the three expert readers, which is consistent with NIOSH recommendations (NIOSH, 2010b). The profusion ratings for Dr. Breyer, the three expert B readers, and the summary interpretations are listed in Table 1.

The individual and summary interpretation results associated with the 22 NIOSH control radiographs are presented in Table 2. ILO classifications including profusion ratings and the reported presence or absence of pleural abnormalities were obtained from NIOSH for the control radiographs and are listed along with the individual B Reader interpretation and the summary reading.

Expert reader classifications on control radiographs demonstrated the validity of his/her classifications according to the current ILO classification guidelines. Twelve of the NIOSH control films were previously classified as having profusion ratings of 1/0 or greater. The study summary reading indicated the same 12 of the 22 radiographs with a profusion rating of 1/0 or higher, which represents 100 percent agreement (Table 3). Additionally, 13 of the 22 NIOSH control radiographs were classified as having evidence of pleural abnormalities. For both

profusion rating and presence of pleural abnormalities, the summary of the expert B Readers' classifications agreed with the NIOSH control classifications with 100 percent accuracy.

With respect to the study summary readings of the subject radiographs (n=65), only one radiograph was categorized as being 1/0 or greater by the expert B readers. All other subject radiographs (n=64) in this study were classified with "no" or 0/0 for profusion rating, which represents the absence of small opacities. This leads to a prevalence of 1.5 percent (Table 4). On the other hand, Dr. Breyer's classifications of the same subject radiographs in this data set included 64 total radiographs with a profusion rating of 1/0 or higher. This represented a 98.5 % prevalence of small opacities. When small opacities were present with a 1/0 or higher designation, the profusion rating ranged from 1/0 to 2/1 (Table 1). For the radiographs which Dr. Breyer reported as having profusion of 1/0 or greater, 84% of the profusion ratings were listed as 1/0 (54/64). The expert readers identified small opacities in 1 or 1.5% of the radiographs while Dr. Breyer identified small opacities in 64 or in 98.5% of the study radiographs.

According to Dr. Breyer's classification of the subject radiographs, nine radiographs had evidence of pleural abnormalities (13.8 %). The expert readers identified three radiographs with the presence of pleural abnormalities, or a 4.6 % prevalence (Table 4).

Discussion

This study attempted to evaluate and validate NIOSH B Reader classifications and compared these results to Dr. Breyer's previously reported findings. Each expert NIOSH-certified B Reader recruited for this study was provided with standard instructions (Appendix A) and reviewed the identical cohort of 87 masked radiographs in a random order.

Although minor disagreements were identified between individual experts, the strategy for composing a panel of three B Readers was to eliminate potential outliers or unintentional individual tendencies of the B Readers according to the NIOSH recommendations for Contested Proceedings. While individual readers may vary in determining profusion or identifying pleural abnormalities, the summary reading provides an overall impression that can be compared with the NIOSH control radiograph classifications and with Dr. Breyer's interpretations.

The inclusion of NIOSH control radiographs that appeared identical to the subject radiographs provided an internal quality control measure to ensure that the study readers were consistently evaluating radiographs using the ILO classification guidelines. The summary readings determined from the three expert readers were in 100 percent agreement with the NIOSH findings for profusion rating (1/0 or higher) and for the presence or absence of pleural abnormalities.

Dr. Breyer found a prevalence of 98.5 percent of small opacities (profusion rating of 1/0 or higher) compared with 1.5 percent prevalence determined by the expert readers. Additionally, pleural abnormalities were also more prevalent among Dr. Breyer's findings (13.8 percent) compared to the summary readings from of the expert readers (4.6 percent). The marked inconsistency between Dr. Breyer's readings and the expert readers' findings for the profusion of small opacities indicates that Dr. Breyer's reported results are not reproducible and therefore calls into question their accuracy and reliability.

Since neither Dr. Breyer nor the three study readers identified any severe problems or concerns with film quality, the marked differences in radiograph classification are unlikely to be associated with film quality. This study included a sample size of 65 study radiographs initially interpreted by Dr. Breyer from January 2006 to February 2009. Regarding the consistency of Dr. Breyer's readings during this three-year period, there appears to be a pattern of persistent misclassification and lack of reproducibility in comparison to the expert readers' findings.

Conclusions

A study was conducted to assess the radiographic evidence consistent with asbestos-related disease and to assess the accuracy and reproducibility of ILO classifications reported previously by a B Reader (Dr. Breyer) in comparison to those of three, experienced NIOSH certified B Readers classifying the same subject radiographs. The marked differences between the ILO classifications of blinded study expert B Readers, supported by internal controls, and Dr. Breyer's reported findings indicate that Dr. Breyer's reported ILO classifications are not reproducible, and are therefore unreliable for diagnosing asbestos-related disease.

Daniel A. Henry, M.D., F.A.C.R.

1-13-11
Date

List of Tables

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Tables

Table 1: Pleural Abnormalities and Profusion Ratings from Reontgenographic Interpretation Forms Obtained From Dr. Breyer and Study Readers

	Name	Film Date	Study Identification Number	Reader Name	Profusion (-/-)	Pleura (Y/N)
				Breyer	(1/1)	N
				Summary	-	N
1	Charles E. Bailey	3/25/2006	S658Y9	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
2	Thomas G. Bohannan	2/7/2009	Q5S3VZ	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
3	Oylen Brown	3/17/2006	05ZRTZ	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
4	Bennie Broyles	2/7/2009	SFCT4G	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(2/1)	N
				Summary	(1/3)	N
5	Charles Cameron	7/14/2008	V6LSBN	Tarver	(1/2)	N
				Shipley	(2/2)	N
				Lockey	(1/1)	N
				Breyer	(1/0)	N
				Summary	-	N
6	Artis P. Clark	3/25/2006	7AY1YT	Tarver	-	Y
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
7	Arthur L. Cole	3/15/2006	IK9H4V	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
8	Harold E. Collins	3/25/2006	CG4RH0	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	Y
				Summary	-	Y
9	Willie Lee Courtney, Jr.	2/1/2009	MA6VZU	Tarver	-	Y
				Shipley	-	Y
				Lockey	-	N

n	Name	Film Date	Study Identification Number	Reader Name	Profusion (-/-)	Pleura (Y/N)
				Breyer	(1/0)	N
				Summary	-	N
10	Kenneth R. Covington	6/5/2008	0PBPJD	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(2/1)	Y
				Summary	-	N
11	Jerry D. Crowsey	3/21/2006	NU9NJN	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
12	Jimmie L. Culclager	2/7/2009	8VJLE7	Tarver	-	N
				Shipley	-	N
				Lockey	-	Y
				Breyer	(1/0)	N
				Summary	-	N
13	Curley Roberts	6/27/2008	4TTNUR	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
14	Charles E. Edwards	3/25/2006	XJWA5X	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
15	Burton Erber	12/10/2007	G8DWGF	Tarver	-	Y
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
16	Jerome Fair	10/8/2007	ZAEMT2	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	Y
				Summary	-	N
17	Ira H. Fisher	6/2/2008	URWKGZ	Tarver	-	N
				Shipley	-	Y
				Lockey	(1/1)	N
				Breyer	(1/0)	N
				Summary	-	N
18	Lonnie C. Fisher	2/2/2009	OABD6C	Tarver	-	N
				Shipley	-	N
				Lockey	-	Y

	Name	Film Date	Study Identification Number	Reader Name	Profusion (-/-)	Pleura (Y/N)
				Breyer	(1/0)	N
				Summary	-	N
19	Oliver Galloway	4/30/2008	VMZ3E3	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
20	James Gill	9/9/2008	VEZHXU	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	-	Y
				Summary	-	N
21	Gonzalo Gomez	3/14/2007	ZVMYTF	Tarver	-	Y
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
22	William Gooseberry, Jr.	3/25/2006	I6WD9Z	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
23	Robert Hadley	5/21/2008	9JHWS2	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
24	James Hall	10/8/2007	NMT369	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
25	Beverly A. Hayes	2/7/2009	XN4IO1	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/1)	Y
				Summary	-	N
26	James Hoffman	7/10/2008	0502RI	Tarver	-	N
				Shipley	-	N
				Lockey	(0/1)	Y
				Breyer	(1/0)	N
				Summary	-	N
27	Stephen W. Huselton	1/29/2008	DZ9HD2	Tarver	-	N
				Shipley	-	N
				Lockey	-	N

	Name	Film Date	Study Identification Number	Reader Name	Profusion (-/-)	Pleura (Y/N)
				Breyer	(1/0)	N
				Summary	-	Y
28	James W. Hutchison	3/23/2006	HNT87S	Tarver	-	Y
				Shipley	-	N
				Lockey	-	Y
				Breyer	(1/0)	N
				Summary	-	N
29	Frankie Jackson	3/25/2006	GI51QB	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
30	Byron James	6/2/2008	DOQVXC	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
31	John James	3/8/2006	EIQ9CF	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
32	Leslie R. Jeanlouis	3/16/2006	5GP2HV	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
33	Sue E. Jiner	5/21/2008	R63IFN	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	Y
				Summary	-	N
34	Robert R. Johnson, Jr.	1/31/2006	AAZQ1I	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
35	Jerry W. Kentle	6/13/2008	91DZ04	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
36	K.C. Keough	5/21/2008	5GM7PZ	Tarver	-	N
				Shipley	-	N
				Lockey	-	N

	Name	Film Date	Study Identification Number	Reader Name	Profusion (-/-)	Pleura (Y/N)
				Breyer	(1/0)	N
				Summary	-	N
37	Billy R. King	3/17/2006	UDLBB1	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
38	Robert H. Landeros	3/18/2006	QYL846	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
39	Larry E. LeGard	3/23/2006	Z4PT4G	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
40	Eugene Limuel	3/25/2006	AS2B43	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	Y
				Summary	-	Y
41	Conrad E. Lindquist	5/13/2008	Y8J7Y6	Tarver	-	Y
				Shipley	-	N
				Lockey	-	Y
				Breyer	(1/0)	N
				Summary	-	N
42	Robert E. McQuinn	3/18/2006	ICKKL3	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
43	Howard T. Meadows	3/25/2006	QTN2WR	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
44	Charles Monroe	3/15/2006	8LB7VX	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
45	Clyde Morgan	3/25/2006	B24RDB	Tarver	-	N
				Shipley	-	N
				Lockey	-	N

	Name	Film Date	Study Identification Number	Reader Name	Profusion (-/-)	Pleura (Y/N)
				Breyer	(1/0)	N
				Summary	-	N
46	Floyd Payne	5/21/2008	G7W0VB	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
47	Thomas Perry	6/3/2008	9PTS2R	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
48	James E. Punch	2/1/2009	QY8207	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
49	Robbie Punch	2/1/2009	W0R7VI	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/1)	N
				Summary	-	N
50	Leodus F. Qualls	3/25/2006	GKIOIS	Tarver	-	Y
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/1)	N
				Summary	-	N
51	Michael Reams	3/25/2006	OT56ZJ	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
52	Ronnie Reynolds	3/25/2006	Q01MT0	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
53	George Robinson	12/21/2006	L69D25	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
54	Randal L. Stanley	3/21/2006	Z79I5F	Tarver	-	N
				Shipley	-	N
				Lockey	-	N

	Name	Film Date	Study Identification Number	Reader Name	Profusion (-/-)	Pleura (Y/N)
				Breyer	(1/0)	Y
				Summary	-	N
55	Arthur P. Terrell	3/18/2006	WAWH3Z	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/1)	N
				Summary	-	N
56	Henry L. Thomas	3/21/2006	P8RX20	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
57	Kenneth W. Thompson	8/29/2008	PZN96Q	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
58	Billie J. Titus	6/2/2008	PX5UK0	Tarver	-	N
				Shipley	-	N
				Lockey	-	Y
				Breyer	(1/0)	N
				Summary	-	N
59	Richard Watson	7/14/2008	0N3N2Y	Tarver	-	N
				Shipley	-	N
				Lockey	(1/0)	N
				Breyer	(1/1)	N
				Summary	-	N
60	Charles J. Wesson	2/7/2009	R3ODET	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	Y
				Summary	-	N
61	Micky Wheeler, Sr.	6/2/2008	HQD8C9	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/1)	N
				Summary	-	N
62	Henry L. Williams, Jr.	3/25/2006	U14E37	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
63	Isaiah Williams, Jr.	3/16/2006	5BWKJV	Tarver	-	N
				Shipley	-	N
				Lockey	-	N

	Name	Film Date	Study Identification Number	Reader Name	Profusion (-/-)	Pleura (Y/N)
				Breyer	(1/1)	N
				Summary	-	N
64	James H. Williams	2/7/2009	LBGPZ9	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				Breyer	(1/0)	N
				Summary	-	N
65	Robert L. Woodard	2/1/2009	05SXJM	Tarver	-	Y
				Shipley	-	N
				Lockey	-	N

Table 2: Summary Pleural Abnormalities and Profusion Ratings Compared to Standard Radiograph Interpretations Established by NIOSH

n	NIOSH Film Number	Film Date	Study Identification Number	Reader Name	Profusion	Pleura
				NIOSH	(2/3)	N
				Summary	(1/1)	N
N-1	47-122	--	YZTRMN	Tarver	(1/1)	N
				Shipley	(1/1)	N
				Lockey	(1/2)	N
				NIOSH	(0/0)	Y
				Summary	-	Y
N-2	59-118	--	DYAMPH	Tarver	-	Y
				Shipley	-	Y
				Lockey	(1/1)	Y
				NIOSH	(2/2)	N
				Summary	(2/3)	N
N-3	7-119	--	LVD8N6	Tarver	(2/3)	N
				Shipley	(2/2)	N
				Lockey	(3/3)	N
				NIOSH	(2/2)	N
				Summary	(2/2)	N
N-4	23-120	--	4E39ON	Tarver	(2/2)	Y
				Shipley	(1/2)	N
				Lockey	(2/2)	N
				NIOSH	(1/1)	N
				Summary	(1/2)	N
N-5	133-121	--	HLZMRY	Tarver	(1/2)	N
				Shipley	(1/0)	N
				Lockey	(2/1)	N
				NIOSH	(0/0)	Y
				Summary	-	Y
N-6	22-123	--	LX0J55	Tarver	-	Y
				Shipley	-	Y
				Lockey	-	Y
				NIOSH	(0/0)	Y
				Summary	-	Y
N-7	44-124	--	1A122P	Tarver	-	Y
				Shipley	-	Y
				Lockey	-	Y
				NIOSH	(0/0)	Y
				Summary	-	Y
N-8	84-125	--	4R755F	Tarver	-	Y
				Shipley	-	Y
				Lockey	-	Y
				NIOSH	(0/0)	Y
				Summary	-	Y
N-9	14-126	--	2UBS7R	Tarver	-	Y
				Shipley	-	Y
				Lockey	-	Y

n	NIOSH Film Number	Film Date	Study Identification Number	Reader Name	Profusion	Pleura
				NIOSH	(2/2)	N
				Summary	(2/1)	N
N-10	5I-127	--	GM3H88	Tarver	(2/1)	Y
				Shipley	(1/2)	N
				Lockey	(2/2)	N
				NIOSH	(1/2)	N
				Summary	(1/1)	N
N-11	27-128	--	L0REKJ	Tarver	(1/2)	N
				Shipley	(1/0)	N
				Lockey	(1/1)	Y
				NIOSH	(1/0)	Y
				Summary	(1/1)	Y
N-12	123-129	--	1T8D0K	Tarver	(1/0)	Y
				Shipley	(1/0)	Y
				Lockey	(1/2)	Y
				NIOSH	(2/3)	Y
				Summary	(2/1)	Y
N-13	26-130	--	U0Q68P	Tarver	(1/2)	Y
				Shipley	(2/1)	Y
				Lockey	(3/2)	Y
				NIOSH	(2/1)	N
				Summary	(2/1)	N
N-14	127-131	--	5ST33H	Tarver	(1/1)	N
				Shipley	(2/1)	N
				Lockey	(2/2)	N
				NIOSH	(1/0)	Y
				Summary	(1/1)	Y
N-15	94-132	--	6ABS9V	Tarver	(1/2)	Y
				Shipley	(1/0)	Y
				Lockey	(1/1)	Y
				NIOSH	(0/0)	N
				Summary	-	N
N-16	16-134	--	YG89V8	Tarver	-	N
				Shipley	-	N
				Lockey	-	N
				NIOSH	(3/2)	Y
				Summary	(2/3)	Y
N-17	56-64-84	--	37JOXZ	Tarver	(2/2)	Y
				Shipley	(2/2)	N
				Lockey	(3/2)	Y
				NIOSH	(0/0)	Y
				Summary	-	Y
N-18	29-70-85	--	F4KLXP	Tarver	-	Y
				Shipley	-	Y
				Lockey	-	Y

n	NIOSH Film Number	Film Date	Study Identification Number	Reader Name	Profusion	Pleura
				NIOSH	(0/0)	Y
				Summary	-	Y
N-19	70-72-86-AN		IHNYN1	Tarver	-	Y
				Shipley	-	Y
				Lockey	-	Y
				NIOSH	(0/0)	Y
				Summary	-	Y
N-20	60-77-88-AN		7NZGTC	Tarver	-	Y
				Shipley	-	Y
				Lockey	-	Y
				NIOSH	(0/0)	Y
				Summary	-	Y
N-21	71-79-89-AN		3QDHDY	Tarver	-	Y
				Shipley	-	Y
				Lockey	-	Y
				NIOSH	(2/3)	N
				Summary	(2/3)	N
N-22	68-133		XQLDES	Tarver	(2/2)	Y
				Shipley	(2/3)	N
				Lockey	(3/2)	N

Table 3: Comparison of Expert Summary Classification with NIOSH Control Classifications

Radiograph Classification	Total Number of 1/0 or Greater	Percent Agreement (Study/NIOSH)	Total Number of "Yes" for Pleural Abnormality	Percent Agreement (Study/NIOSH)
NIOSH Control Results	12	100.0%	13	100.0%
Expert Summary Results	12		13	

Data represent the NIOSH control classification scores and the median classifications of the three expert readers (n=22)

Table 4: Comparison of the Prevalence of Profusion Ratings Greater than 1/0 and Presence of Pleural Abnormalities between Dr. Breyer and the Summary of the Expert Readers

Radiograph Interpretations	Total Number with 1/0 or Greater	Prevalence of 1/0 or Greater	Total Number of "Yes" for Pleural Abnormality	Prevalence of Pleural Abnormalities
Dr. Breyer	64	98.5%	9	13.8%
Expert Summary	1	1.5%	3	4.6%

Data represent the radiographic classification scores of Dr. Breyer and the median classification score of the three expert readers (n=65)

Appendix A

Instructions:

- Please find 87 total chest radiographs enclosed with a corresponding Roentgenographic Interpretation Form (ILO revision 2000).
- A pre-paid return shipping label is enclosed
- Please fill out the attached inventory form
- Read each radiograph and fill out the entire RI form in a manner consistent with their training, certification and normal practices.
- After you have completed reading all chest radiographs, please repackage the films and associated Roentgenographic Interpretation Form and return to the following address:
  Dallas M. Cowan
  ChemRisk, LLC
  25 Jessie Street, Suite 1800
  San Francisco, CA 91405
- If you have questions about the return shipment or lose the enclosed Fed-Ex shipping label, please contact Dallas Cowan (dcowan@chemrisk.com) (303) 417 1046 x 1004